

Application No. 10/022,997

Docket No. 2001U014.US

Reply to Office Action Dated May 25, 2004

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A catalyst precursor composition represented by the formula:



wherein M is a metal from Groups 1 to 15 and the Lanthanide series of the Periodic Table of the Elements;

g is an integer equal to or greater than 1;

m is an integer equal to or greater than 2;

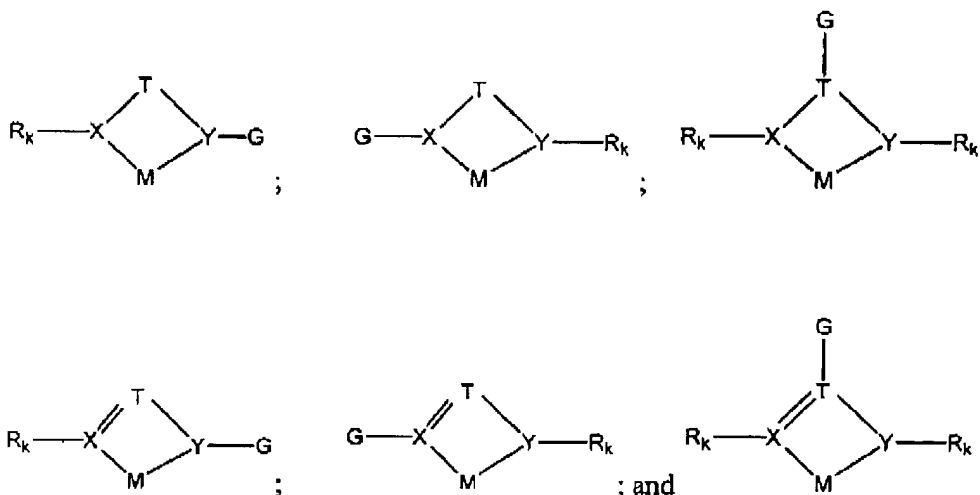
each L is a monovalent, bivalent, or trivalent anionic ligand;

p is an integer equal to or greater than 1;

n is an integer equal to or greater than 2;

G is a at least a divalent spacing group that is capable of bonding to at least two A substituents; and

at least one A is selected from the following catalytically active ligands:



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wherein G is bound to at least two A substituents;

X and Y are Group 14 or 15 atoms;

~~wherein~~ T is a bridging group containing 2 or more bridging atoms;

R is selected from bulky and non-bulky substituents with respect to X, Y, or both X and Y, and

k is an integer that will vary to satisfy the oxidation state of but will range from about 1 to 3.

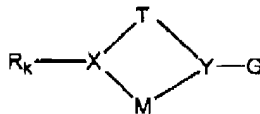
2. (Original) The catalyst precursor composition of claim 1 wherein each L is independently a monovalent, bivalent, or trivalent anionic ligand containing from about 1 to 50 non-hydrogen atoms, and is independently selected from the group consisting of halogen containing groups; hydrogen; alkyl; aryl; alkenyl; alkylaryl; arylalkyl; hydrocarboxy; amides, phosphides; sulfides; silyalkyls; diketones; borohydrides; and carboxylates.
3. (Original) The catalyst precursor composition of claim 2 wherein each L is independently selected from alkyl, arylalkyl, and halogen containing groups and contains from about 1 to 20 non-hydrogen atoms.
4. (Original) The catalyst precursor composition of claim 1 wherein G is selected from alkyl, alkenyl, cycloalkyl, heterocyclic (both heteroalkyl and heteroaryl), alkylaryl, arylalkyl.
5. (Original) The catalyst precursor composition of claim 4 wherein G contains from about 1 to 20 non-hydrogen atoms.
6. (Original) The catalyst precursor composition of claim 1 wherein G contains from about 1 to 50 non-hydrogen atoms.

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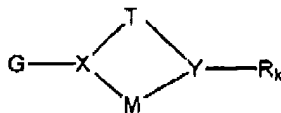
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7. (Original) The catalyst precursor composition of claim 1 wherein R is a non-bulky substituent that has relatively low steric hindrance with respect to X or Y and is selected from the group consisting of straight and branched chain alkyl groups.
8. (Original) The catalyst precursor composition of claim 7 wherein R is a C₁ to C₃₀ alkyl group.
9. (Original) The catalyst precursor composition of claim 8 wherein R is a C₁ to C₂₀ alkyl group.
10. (Currently amended) The catalyst precursor composition of claim 1 wherein R is a bulky substituent with respect to X or Y and is selected from alkyl, alkenyl, cycloalkyl, heterocyclic, alkylaryl, and arylalkyl, ~~polymeric, and inorganic ring structures.~~
11. (Original) The catalyst precursor composition of claim 10 wherein R is a bulky substituent and contains 3 to 30 non-hydrogen atoms.
12. (Original) The catalyst precursor composition of claim 1 wherein M is selected from Groups 3 to 7 of the Periodic Table of the Elements.
13. (Original) The catalyst precursor composition of claim 1 wherein A is represented by:



14. (Original) The catalyst precursor of claim 1 wherein A is represented by:



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15. (Currently amended) A catalyst composition comprising:

a) a catalyst precursor composition represented by the formula:



wherein M is a metal from Groups 1 to 15 and the Lanthanide series of the Periodic Table of the Elements;

g is an integer equal to or greater than 1;

m is an integer equal to or greater than 2;

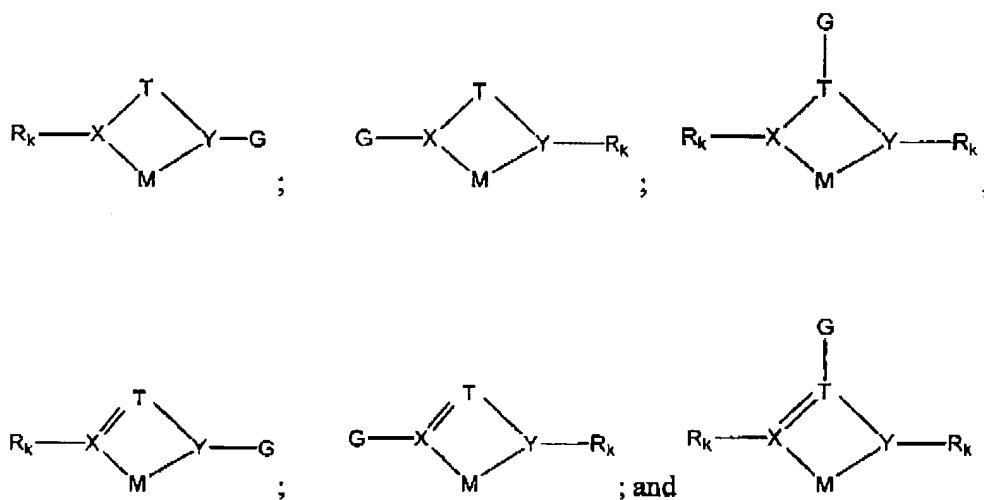
each L is a monovalent, bivalent, or trivalent anionic ligand;

p is an integer equal to or greater than 1;

n is an integer equal to or greater than 2;

G is a at least a divalent spacing group ~~that is capable of bonding to at least two A~~ substituents; and

~~at least one~~ A is selected from the following catalytically active ligands:



wherein G is bound to at least two A substituents;

X and Y are Group 14 or 15 atoms;

~~wherein~~ T is a bridging group containing 2 or more bridging atoms;

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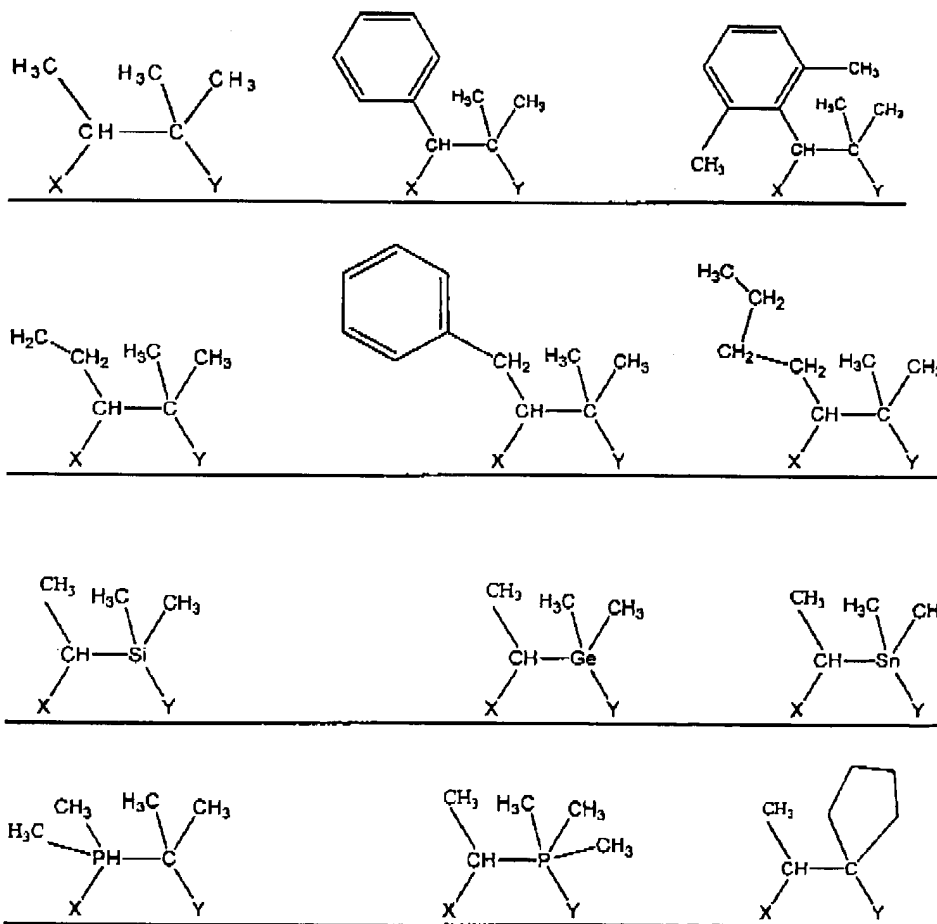
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R is selected from bulky and non-bulky substituents with respect to X, Y, or both X and Y; and

k is an integer that will vary to satisfy the oxidation state of but will range from about 1 to 3;

b) and an activator.

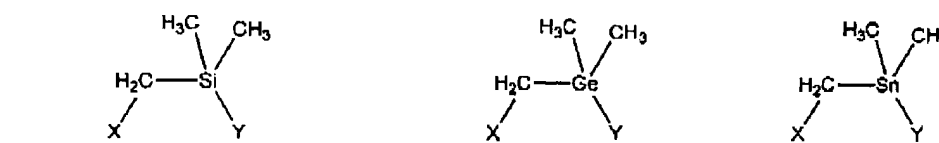
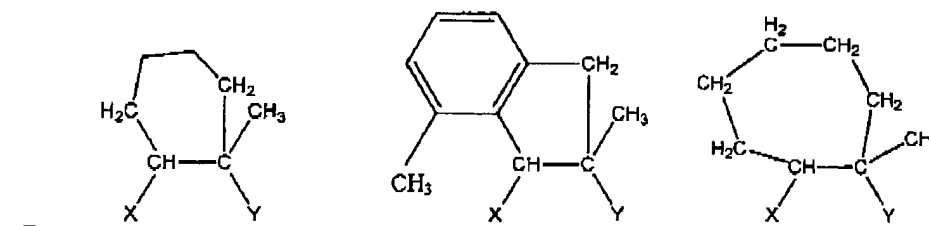
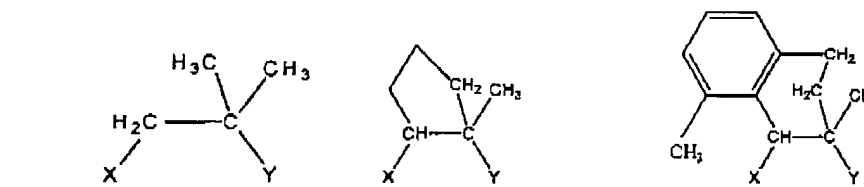
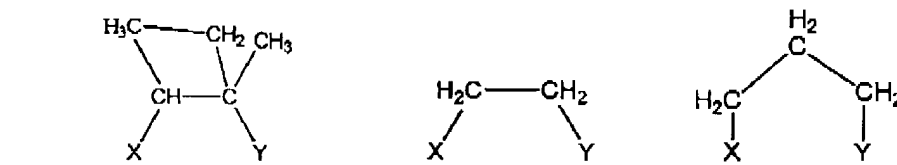
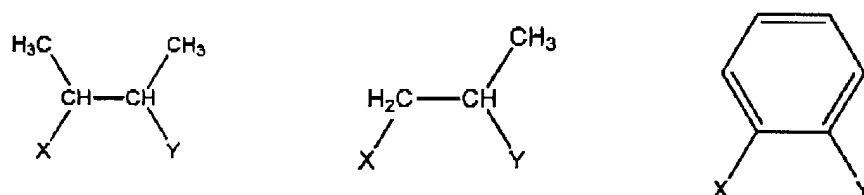
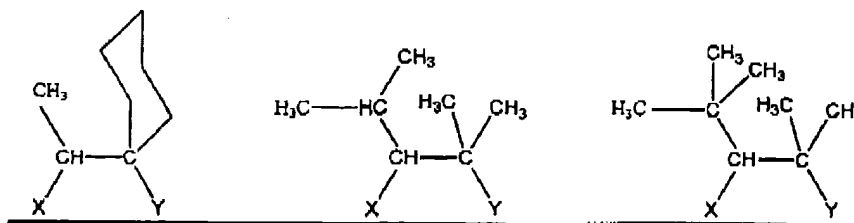
16. (Currently amended) The catalyst composition of claim 15 wherein T is selected from:



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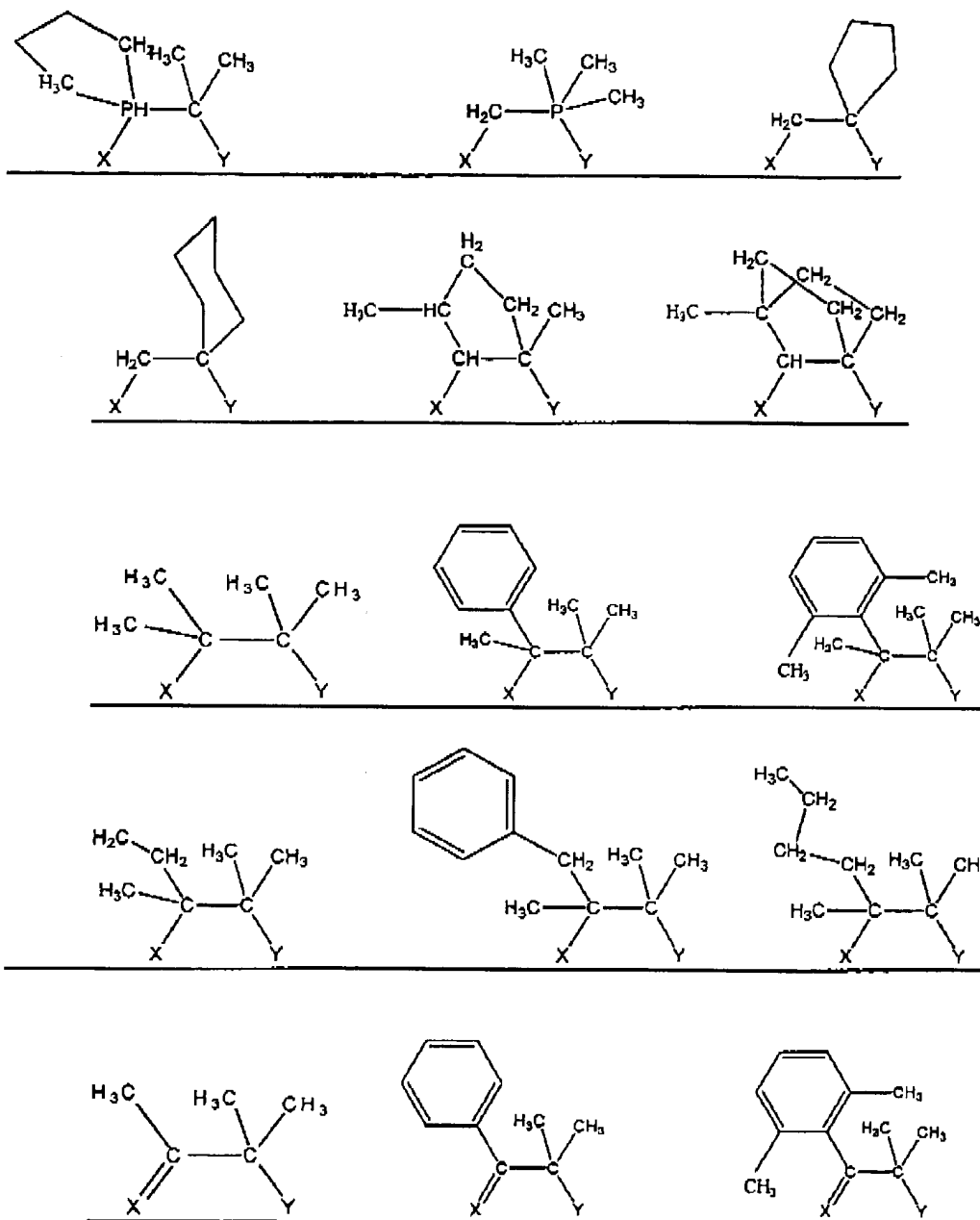
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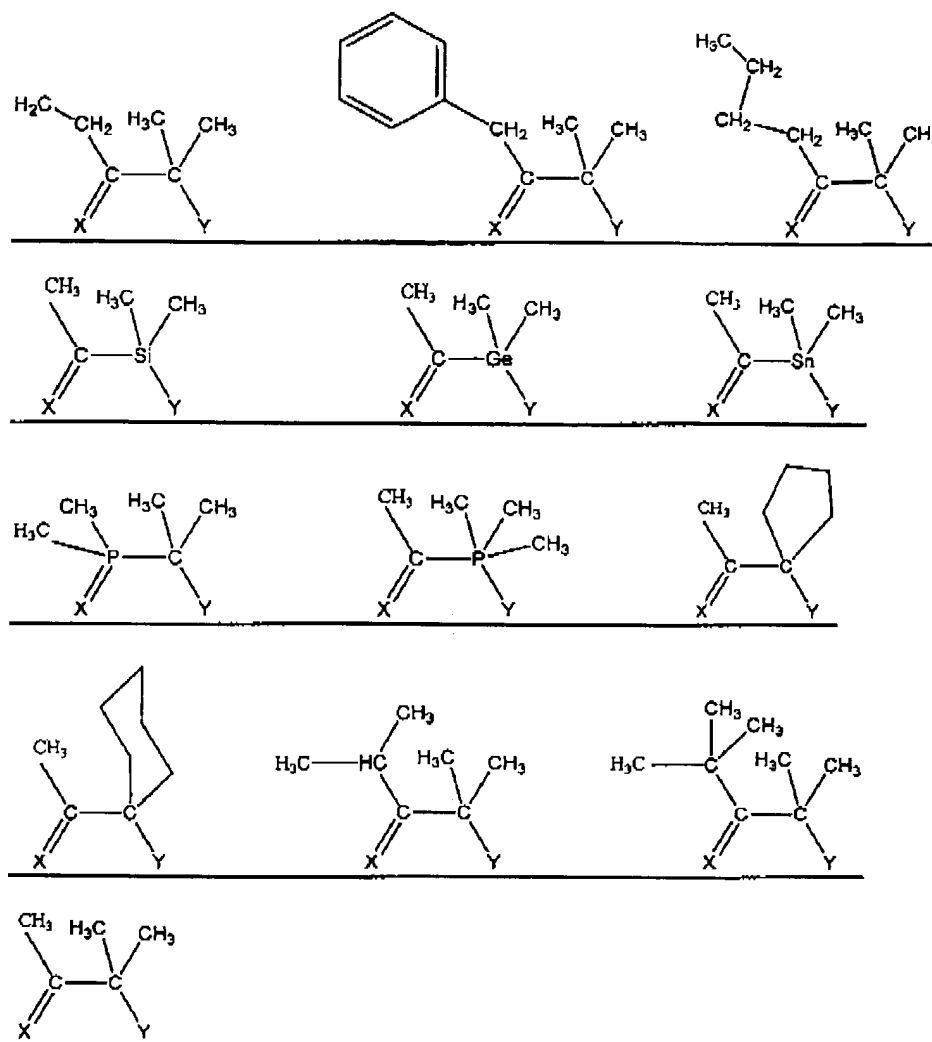
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wherein the X and Y substituents are included for convenience.

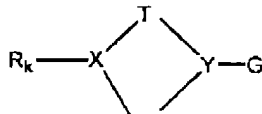
17. (Original) The catalyst composition of claim 15 wherein each L is independently a monovalent, bivalent, or trivalent anionic ligand containing from about 1 to 50 non-hydrogen atoms, and is independently selected from the group consisting of halogen containing groups; hydrogen; alkyl; aryl; alkenyl; alkylaryl; arylalkyl; hydrocarboxy; amides, phosphides; sulfides; silyalkyls; diketones; borohydrides; and carboxylates.

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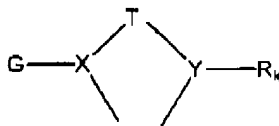
18. (Original) The catalyst composition of claim 17 wherein each L is independently selected from alkyl, arylalkyl, and halogen containing groups and contains from about 1 to 20 non-hydrogen atoms.
19. (Currently amended) The catalyst composition of claim 15 wherein G is selected from alkyl, alkenyl, cycloalkyl, heterocyclic (~~both heteroalkyl and heteroaryl~~), alkylaryl, arylalkyl and heteroalkyl.
20. (Original) The catalyst composition of claim 19 wherein G contains from about 1 to 50 non-hydrogen atoms.
21. (Original) The catalyst composition of claim 15 wherein R is a non-bulky substituent that has relatively low steric hindrance with respect to X or Y and is selected from the group consisting of straight and branched chain alkyl groups.
22. (Original) The catalyst composition of claim 21 wherein R is a C₁ to C₃₀ alkyl group.
23. (Original) The catalyst composition of claim 22 wherein R is a C₁ to C₂₀ alkyl group.
24. (Currently amended) The catalyst composition of claim 15 wherein R is a bulky substituent with respect to X or Y and is selected from alkyl, alkenyl, cycloalkyl, heterocyclic, alkylaryl, and arylalkyl, ~~polymeric, and inorganic ring structures.~~
25. (Original) The catalyst composition of claim 24 wherein R is a bulky substituent and contains 3 to 30 non-hydrogen atoms.
26. (Original) The catalyst composition of claim 15 wherein M is selected from Groups 3 to 7 of the Periodic Table of the Elements.

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27. The catalyst composition of claim 15 wherein A is represented by:



28. The catalyst composition of claim 16 wherein A is represented by:



29. (New) The catalyst precursor composition of Claim 1, wherein X and Y are selected from nitrogen, sulfur and phosphorous.
30. (New) The catalyst composition of Claim 15, wherein X and Y are selected from nitrogen, sulfur and phosphorous.